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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hitoshi Asahi

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EXAMINER

LUK, VANESSA TIBAY

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,837	<b>Applicant(s)</b> ASAHI ET AL.	
	<b>Examiner</b> VANESSA LUK	<b>Art Unit</b> 1733	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 7,8 and 10-12 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### *Status of Claims*

Claims 7, 8, and 10-12 are pending and presented for examination on the merits.

Claims 1-6, 9, and 13-17 are canceled. Claim 7 is the sole independent claim.

### *Claim Rejections - 35 USC § 103*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 7, 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashima et al. (JP 10-176239, Computer-Generated English Translation).

Regarding claims 7, 8, and 10, Kashima et al. teach a steel sheet containing the following elements in percent by weight (abstract):

Element	Claim 7	Kashima et al.
C	0.03 - 0.30	0.02 - 0.12
Si	0.01 - 0.8	0.1 - 1.5
Mn	0.3 - 2.5	0 - 2.0
P	0 - 0.03	0 - 0.05
S	0 - 0.01	0 - 0.01
Al	0.001 - 0.1	0.01 - 0.10
N	0 - 0.01	Not taught
Fe & impurities	balance	balance

Kashima et al. do not teach the intentional addition of nitrogen; therefore, it will be regarded as being absent or present only at impurity levels, which lies within the

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claimed range. A *prima facie* case of obviousness exists when ranges disclosed in the prior art overlap those in the claims (MPEP § 2144.05); therefore, the claimed ranges do not constitute a patentable distinction over the prior art. The steel also comprises a two-phase (dual-phase) microstructure essentially consisting of 1-20 area percent martensite and the remainder ferrite (abstract; paragraph [0024]). Because the dual-phase structure essentially consists of martensite and ferrite, the two phases are adjacent to one another, thus satisfying the grain boundary configuration as claimed. The average size of the martensite grains is less than 10  $\mu\text{m}$  (paragraph [0025]), which overlaps the claimed range. The steel sheet is formed into a pipe, and the small decrease in the yield strength of the steel after it has been formed into a pipe signifies a reduced Bauschinger effect (abstract; paragraphs [0005], [0025], [0035], [0036]; Tables 2 and 3,  $\Delta\text{YS}$  column).

It is noted that the claimed invention, which is drawn to a product, recites process limitations of heating and quenching the pipe. Kashima et al. do not teach heating and quenching the pipe as claimed. However, it should be noted that the patentability of a product does not rest on its method of manufacture (MPEP § 2113). When the prior art discloses a product appearing to be identical or substantially identical to the claimed product, the burden falls on Applicant to show an unobvious difference.

Further regarding claim 7 and regarding claim 12, Kashima et al. do not teach that the Charpy V-notch value in the transverse direction at  $-20^{\circ}\text{C}$  is at least 40 J and that the ratio of the proportional limit of the compression stress-strain curve in the circumferential direction before and after expansion of the steel pipe is 0.7 or more. It is

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well established, however, that when a material is possesses a structure or composition that is identical or substantially identical to that of the claimed invention, any claimed properties or functions are presumed to be inherent (MPEP § 2112.01). Thus, in light of the overlapping chemical composition and microstructure, one of ordinary skill in the art would expect the steel of Kashima et al. to possess the same Charpy V-notch values and proportional limit ratios as that of the claimed invention.

Regarding claim 11, Kashima et al. teach that the steel sheet may optionally further contain the following elements, in percent by weight (abstract, para. [0009]):

Element	Claim 11	Kashima et al.
Nb	0 - 0.1	0 - 0.08
V	0 - 0.3	0 - 0.08
Mo	0 - 0.5	0.1 - 1.5 (Mo+Cr)
Ti	0 - 0.1	0 - 0.08
Cr	0 - 1.0	0.1 - 1.5 (Mo+Cr)
Ni	0 - 1.0	0 - 1.0
Cu	0 - 1.0	0 - 1.0
B	0 - 0.003	Not taught
Ca	0 - 0.004	0 - 0.005

Kashima et al. do not teach the intentional addition of boron to the steel; therefore, boron will be regarded as being absent (i.e., zero percent by weight) in the steel sheet.

3. Claims 7, 8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kami et al. (JP 2003-096545, Computer-Generated English Translation).

Regarding claims 7, 8, 10, and 12, Kami et al. teach a tube (pipe) containing the following elements in percent by mass (abstract; paragraphs [Claim 1]):

Element	Claim 7	Kami et al.
C	0.03 - 0.30	0.10 - 0.30
Si	0.01 - 0.8	0.01 - 2.0
Mn	0.3 - 2.5	2.0 - 4.0
P	0 - 0.03	≤ 0.025
S	0 - 0.01	≤ 0.02
Al	0.001 - 0.1	0.010 - 0.10
N	0 - 0.01	≤ 0.010
Fe & impurities	balance	Balance

The microstructure of the steel consists primarily of ferrite and martensite (dual-phase) (paragraph [0008]; Table 2, third column from right side). The lamellar structure indicates that ferrite and martensite are adjacent to one another, thus satisfying the grain boundary configuration as claimed. After the steel is formed into a tube, it is heated to a two-phase alpha(ferrite)+gamma(austenite) region (e.g., 650-850°C) and subsequently cooled (quenched) (paragraphs [0013], [0016], [0030]).

Kami et al. do not explicitly teach a small occurrence of the Bauschinger effect, the grain size and area ratio of martensite, Charpy V-notch values, and proportional limit ratios as claimed. However, it is well established that when a material possesses a structure or composition that is identical or substantially identical to that of the claimed invention and/or is produced by a method that is identical or substantially identical to that of the claimed invention, any claimed properties or functions are presumed to be inherent (MPEP § 2112.01). Kami et al. teach a steel with an overlapping chemical composition that is produced by the same claimed method (compare paragraphs [0013] and [0027]-[0030] with lines 18-28 of page 18 of the instant specification); therefore, one of ordinary skill in the art would expect the steel of Kami et al. to possess the same properties as those of the claimed invention.

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Regarding claim 11, Kami et al. teach the optional inclusion of one or more of the following elements (paragraphs [Claim 5], [0009], [0010]):

Element	Claim 11	Kami et al.
Nb	0 - 0.1	0.1 or less
V	0 - 0.3	0.5 or less
Mo	0 - 0.5	1 or less
Ti	0 - 0.1	0.2 or less
Cr	0 - 1.0	2 or less
Ni	0 - 1.0	1 or less
Cu	0 - 1.0	1.5 or less
B	0 - 0.003	less than 0.005
Ca	0 - 0.004	less than 0.1

A *prima facie* case of obviousness exists when ranges disclosed in the prior art overlap those in the claims (MPEP § 2144.05); therefore, the claimed ranges do not constitute a patentable distinction over the prior art.

### ***Response to Arguments***

4. Applicant's arguments filed 6/17/2011 have been fully considered but they are not persuasive.

Applicant argues that Kashima does not disclose that the steel plate is heat treated as claimed after being shaped into a pipe. In response, the claim is drawn to a product, not a process. It should be noted that the patentability of a product does not rest on its method of manufacture. See MPEP § 2113. When the prior art discloses a product appearing to be identical or substantially identical to the claimed product, the burden falls on Applicant to show an unobvious difference. It is acknowledged that a

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declaration was filed to show an unobvious difference. The declaration is addressed in a section below.

Applicant argues that the cooling rate in Kami is not quenching because quenching requires a rapid rate of cooling, whereas the cooling rate of 2°C/s in Kami is too slow. In response, terms such as “slowly” and “rapidly” (Remarks, paragraph bridging pp.5-6) are relative terms. Since relative terms have no fixed numerical cut-offs, it would appear to be arbitrary to characterize the cooling rate in Kami as slow when there is no fixed value to which it is compared. Upon reviewing the instant specification, there appears to be no definition as to what rate is considered quenching, and there are no examples that disclose a minimum quenching rate.

Even if one were to accept the assertion that a cooling rate of 2°C/s is not quenching, it should be noted that Kami teaches that the cooling can be forced cooling, such as mist cooling, fog cooling, and spray cooling (paragraph [0033]). It is noted that these types of cooling fall within the scope of the proposed definition of quenching (Remarks, paragraph bridging pp.6-7, “spraying the heated steel with water or oil”). Therefore, Kami does satisfy the alleged definition of quenching, as interpreted by Applicant.

It is noted that the Remarks refer to many points raised in the Declaration filed 6/17/2011. A full response to the declaration is provided below.



***Acknowledgment of Declaration under 37 CFR 1.132***

The declaration under 37 CFR 1.132 filed 6/17/2011 is insufficient to overcome the rejection of claims 7, 8, and 10-12 based upon Kashima and Kami as set forth in the last Office action for at least the following reasons:

The declaration makes general conclusions without providing specific data to support said conclusions. MPEP § 716.01(c)(I). Specifically, the declaration states that one of ordinary skill in the art would understand that the proportional limits lie within the claimed range (Figure A) and do not lie within the claimed range (Figures B, C) by looking at the figures (paragraph 46). At particular issue is the proportional limit ratio, which is a measure of the Bauschinger effect. As described in the instant specification (p. 8, lines 3-11; p. 9, lines 2-22; Figures 1-3), the values needed to calculate the proportional limit ratio come from two different stress-strain curves -- one measured before deformation and one measured after deformation. Figures A-C of the instant declaration display a single stress-strain curve for each type of steel product (Declaration, paragraphs 35, 39, and 40). Therefore, it is unclear how one of ordinary skill in the art could calculate a specific ratio from a single curve.

The data presented do not provide for a direct comparison between the present invention and the cited prior art. With respect to Figure B, the data are drawn to a plate, not a steel pipe, as is found in Kashima (abstract, the sheet is made into a tube) and Kami (abstract, the product is a tube). With respect to Figure C, the data are drawn to a pipe that has not been heated or quenched. This deviates from Kami, where the tube is heated and quenched. Furthermore, the chemical composition of the tested steel

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(Declaration, paragraph 32) does not lie within the ranges of Kami (compare C and Mn contents). Since the steels tested are not within the scope of Kashima and Kami, a determination cannot be made regarding whether the proportional limit ratio is or is not different from that claimed.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VANESSA LUK whose telephone number is (571)270-3587. The examiner can normally be reached Monday-Friday 9:30 AM-4:30 PM ET.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VANESSA LUK/

Examiner, Art Unit 1733

/Scott Kastler/

Primary Examiner, Art Unit 1733